SOME APPROACHES TO THE EXPERIMENTAL METHOD IN THE SCIENTIFIC ECONOMIC RESEARCH

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Abstract :
Used on a wide scale in the natural sciences, the experimental method was accepted and used in the research field of the economic sciences much later and with a lot of restraint. Although the application of the experiment in the field of the economic sciences implies a lot of real problems, the experimental method is, today, a proceeding used in the scientific economic investigations, having an important role both in verification and demonstration of the causal hypothesis and in the improvement and development of the field through the identification, detection of some new data regarding the examined phenomenon.

Starting from the etymological significance of the term *experience* (Lat. ***experientia*** – "to prove", "to experiment"), the experimental method in economics can designate "the action of testing or proving". According to Claude Bernard, the one who laid the theoretical foundations of the experimental method, "experiment is but provoked observation […] used to serve an experimental idea", while the experimental method as a scientific method, "is based entirely on the experimental testing of a scientific hypothesis" (*La science expérimentale*).

Used to a great extent in the natural sciences (mathematics, physics, chemistry, biology, etc.), the experimental method was hardly accepted and it wasn't used until later in the research field of economic sciences. To start with, most of the specialists in economy branches agreed upon the idea that in the economic field, hypothesis cannot be tested by means of laboratory experiment and human categories ("there is no such thing as a laboratory in which economists can tests their scientific hypothesis. Economy is essentially a moral science", *Encyclopaedia Britannica*). The debate on using the experiment as a testing method for hypothesis and for drawing out some conclusions of the investigation is always with us. Those who deny the useful character of the experiment within the economic science and practice explain their attitude by bringing into discussion the features of the economic phenomena. The complexity of such phenomena makes the testing of the hypothesis by means of the experimental method extremely difficult and limited (economic phenomena develop in an unstable environment, under the direct influence of different factors, which are difficult to isolate and test the causal hypothesis; also, the influence of the factors the experiment didn't take into account cannot be removed).

Another objection against the experimental method is the lack of objectivity the researcher can have in properly organizing the experiment, in putting forward and interpreting the conclusions. Besides, the temporal and spatial dimensions of some economic phenomena make their experimental study almost impossible.

The above-mentioned criticism was discouraged by those economists who set these difficulties down to the way of developing and capitalizing the

experiment, and not to the method itself. These difficulties are not generated by the simplicity of the experimental hypotheses, but they frequently come from the incorrect way through which the researcher draws conclusions and formulates the theoretical construction, as a result of the experiment. Since the dawn of the theoretical bases of the method, Claude Bernard (*La science expérimentale*) supported and encouraged the fact that "what characterizes the experimental method is not so much the means to acquire facts, but the way they are argumented and explained."

In the contemporary economic research, the experiment is identified as an important actor within the progress of the economic science according to the fact that "Submission to observed or experimental data is the golden rule, which dominates any scientific discipline. Any theory whatever, if it is not verified by empirical evidence, has no scientific value and should be rejected." (Maurice Allais, Nobel Prize Winner). The Romanian scientist, Anghel Rugină had also emphasized that "nothing stands in the way of the experimentation process, with the only difference that the notion of laboratory should be adapted to the nature of the object under research."

In line with these acknowledgements and without outsizing the position of the experiment in the methodology of the economic scientific research, we consider that some remarks upon the difficulties of the researchers in application of the experimental method are exaggerated. In spite of all the real problems implied by the application of the experiment in the field of social sciences, and, mainly, in the economic sciences, the experimental method is today a widely used technique in the economic scientific investigations, having the leading role in the examination and demonstration of causal hypotheses. Also, it plays an important role in the enrichment and development of knowledge, identifying new information and data related to the phenomenon under analysis.

It represents an active and controlled intervention upon the experimented subject with the help of some variables of the subject for testing its answer to their questions. The experiment estimates the influence of these variables (independent variables) established as hypothesis which can be changed and manipulated by the researcher on the experimented subject (dependent variable). Julian L. Simion (*Basic Research Methods in Social Sciences*, 1969) characterizes the experiment under these terms, mentioning that

"The essence of the experiment lies in the fact that the researcher deliberately use one or even more independent variables (X1, X2, X3…), thus exposing different subject groups to different variables and then noticing the changes that have taken place within the dependant variables (Y1, Y2, Y3…)."

The researcher can thus check his hypotheses about the proper relations of dependence and determination (in this scientific field, this methodological element is called the variety of the variables), systematically modifying the experimental elements (the independent variables) in order to verify its effect on those changes which occur along the dependent variables.

The purpose of such an approach is the drawing of some conclusions, which represent the scientific knowledge of the essence and the principles of the phenomenon in question.

Owing to the experiment, some facts and economic behaviour are minimized and concentrated, in order to control the elements of production of the investigated processes. The enforcement of this method supposes the simplification of the real problem by imposing a restriction on the number of

independent variables, which operate on the phenomenon under experiment. These variables are chosen as a hypothesis for the experiment. Also, there occur the elimination and isolation of some variables (variables externally controlled), whose influence on the dependent variable (the unit subjected to the experiment) is kept under strict control.

Moreover, Leon Festinger's definition of the experiment (L. Festinger, D. Katz, 1963) proves clearly these aspects. According to him, the experiment is concerned with "the examination and the estimation of the manipulation of an independent variable against the dependent variable under the minimal circumstances of the intervention of other elements."

The main problem of implementation of this method in the field of economic research is connected with the essential features and specificity of this scientific field (unstable external environment; the variety of the phenomena, which are subjected to the experiment). This problem prevents some disturbing variables (uncontrolled external variables) from isolation and control, permitting them to operate on the investigated phenomena and modify the result of the experiment. These errors are the more critical as the number of uncontrolled variables is on the increase. For supplying these inconveniences, it is recommended to implement the *following experimental models*:

- the separation within the experimental method by agreeing upon the number of the groups used for the experimental purpose and the specificity of the way of testing the dependent variable, a model which follows the following experimental schemes:

√ the employment of two observing groups; the first one is experimental (and the specific procedure is applied on it) and the second one is a testing one (the results are compared and the independent variable does not influence the latter one); the estimation of the dependent variable will occur only after the insertion of the experimental elements (the independent variables);

√ the exploring of two observing groups together with the estimation of the dependent variable, before and after the insertion of the independent variables;

- the admission of a different number of independent variables, controlled by the researcher, following the next three schemes:

√ a single independent variable

√ more independent variables

√ the connection between the representation of the determinants and their coupling with the reactions.

It is a fact that the economic phenomena are under the influence of various causal determinants. The more they are taken into consideration, the bigger the problems related to the expenses and organization of the experiment. As a consequence, in the economic research only those relevant determinants are considered, thus restricting the experimental schemes.

The ability to control the variables that influence the results of the experiment is, eventually, a characteristic element. As stated by the sociologist Ernest Greenwood (*Experimental Sociology*), the experimental method offered the possibility "to test the causal hypothesis by understanding some controlled contrasting situations". By the same token, Lee Harvey and Morag Mac Donald (*Doing Sociology. A Practical Introduction*) underline the fact that "control is the key problem in an experiment."

The validity and usefulness of the method is conditioned by the agreement between the hypothesis and the results of the experiment. This agreement can be reached only if the research hypotheses are accurately formulated, the stages of the experiment are strictly followed, and the researcher is able to

manipulate the independent variables and interpret the causal relations among the variables. The experiment needs a close inspection of the conditions of the examination and their permanent control under the supervision of well-specialized and well-trained personnel, capable of solving the problems that might occur during the procedure.

The experimental method, usually related to the analytic approach of the phenomenon proves itself very valuable in the economic investigation, especially when testing the causal hypotheses. Nevertheless, the place and role of the experiment in the economic scientific research should not be overestimated, as some researchers do. Only by working together with other procedures and research methods can the experimental method provide further knowledge and serious understanding of the way the economic phenomena work and develop, thus contributing to the progress and advancement of the field.

REFERENCES

[1] Chelcea S., *Metodologia cercetării sociologice. Metode cantitative si calitative*, Ed. Economică, Bucureşti, 2001.

[2] Enachescu C., *Tratat de teoria cercetării stiintifice*, Ed. Polirom, Bucureşti, 2005.

[3] Festinger L., Kantz D., *Les méthodes de recherche dans les sciences sociales*, Paris: P.U.F.

[4] Petrescu I., Dragomir C., *Metodologia cercetării ştiinţifice şi a elaborării lucrării de licenţă în management*, Ed. Lux Libris, Braşov, 1999.

[5] Răboacă Gh., Ciucur D., *Metodologia cercetării ştiinţifice economice*, Editura Fundației România de Mâine, 2004.